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**From:** Cox, Michael [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CDDD6A5BB3C2477183799EF56CDB464F-COX, MICHAEL]  
**Sent:** 4/14/2016 12:51:55 AM  
**To:** Allnutt, David [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=6e28f5bf9cbf4b8b9eda7751c2f10750-Allnutt, David]; Anderson-Carnahan, Linda [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=c34cc9be6ab74896b7ea15338cbe41eb-Anderson-Carnahan, Linda]; Bonifaci, Angela [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d9bd4b43bb5f4317b6f2f2294877d346-Bonifaci, Angela]; Bonifacino, Gina [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=2497cad4ed6046b398f2ba5d13345242-Bonifacino, Gina]; Brown, Cheryl A. [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=dd6f8a562924439aaf97ca98ddaf1e10-Brown, Cheryl]; Cope, Ben [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=497efadd936e4d378225116b8f50fd3f-Cope, Ben]; Cora, Lori [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=c8850941bf1540c796559dce75c2f5ee-Cora, Lori]; Cox, Michael [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=cddd6a5bb3c2477183799ef56cdb464f-Cox, Michael]; Croxton, Dave [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=ca7b9940863640d5b96f4295ea3c9641-Croxton, Dave]; Davis, Michelle V. [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=5887757041744158a41215a9c33fd4a3-Davis, Michelle]; Dunbar, Bill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=133b66d6ab1b42108751e37b28176ec3-Dunbar, Bill (William) D.]; Duncan, Bruce [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=ff04bb22dfc44cbb9fb60c1de6f6e130-Duncan, Bruce]; Fullagar, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=7ba061353c314b40a14a8be1ee382ae3-Gable, Jill]; Labiosa, Rochelle [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=ded3654216c9461d95cd5a3ceec507ef-Labiosa, Rochelle]; Littleton, Christine [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=2d5631654c3840f48f71c2457d8fb2ac-Reichgott, Teena]; Lohrman, Bridgette [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=0165d4dc0da54f03985e6042638acdca-Lohrman, Bridgette A.]; Mlsna, Ivy [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89bcf80a57804a1eb45c444749cb4550-Mlsna, Ivy]; Nelson, Walt [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=023bd72e66a348018f63b4786c65c51b-Nelson, Walt]; Olsen, Tony [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=881db40ea5044b1daaee914f954f5573-Olsen, Tony]; Pacella, Stephen [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=e7bbd90fb0784c9bb124931c63a6a746-Pacella, Stephen]; Rappoli, Brian [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=5d1b13e0ec164d34befd1431f7236447-Rappoli, Brian]; Szelag, Matthew [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=f1e48230d96943f8acb72810e32ce8d6-Szelag, Matthew]; Zachmann, Bill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=e765392b7ee94fa1bd25b00f9a9c7824-Zachmann, B]; Ziegler, Sam [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=70e177091bd1472e81022fd27426fc5b-SZIEGLER]  
**Subject:** FW: Re: EPA OA Meeting

FYI.

Michael Cox  
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**From:** Richard Feely [<mailto:richard.a.feely@noaa.gov>]

**Sent:** Tuesday, April 12, 2016 5:00 PM

**To:** Chris Sabine - NOAA Federal; Libby Jewett; Simone Alin - NOAA Federal; Jan Newton; Andrea Fassbender - NOAA Affiliate; Nina Bednarsek - NOAA Affiliate; Cox, Michael

**Subject:** Fwd: Re: EPA OA Meeting

Dear Chris and Libby:

On Monday morning we met with members of the EPA Region 10 Staff in Seattle led by Michael Cox to discuss the Ocean Acidification and Hypoxia Panel results and the availability of ocean acidification data for Washington coastal waters. ON the telephone were representatives from other west coast regional offices as well as EPA headquarter in DC. Jan lead off the discussion with an excellent overview of the Ocean Acidification

and Hypoxia Panel results and recent findings. I followed that with a discussion of next steps based on the IWG-OA response letter to the PCC.

The response from the EPA staff was quite positive and they assured us that they will looking forward to taking the next steps towards collaboration with the PCC.

The next part of the meeting focused on presentations by Andrea, Nina, Simone, Jan and myself on the status and availability of OA-related data

on the outer coast of Washington State and in Puget Sound. Andrea started out with her most recent analysis of carbon data sets from cruises

and moorings showing very good agreement on seasonal patterns but very significant differences in patterns between Hood Canal and the outer coast due to differences in riverine input, biological productivity and mixing. This was the first time Andrea gave this presentations and we were all very favorably impressed with her new results. The EPA staff wanted to know when her new data would be available and we suggested that it could be as early as next fall. Jan followed with the chemical results for Puget Sound. She showed that there were strong regional and vertical gradients that were driven by seasonal stratification, river input, biological productivity and mixing. Nina followed with a discussion of how the biological impacts of survival, calcification and dissolution on pteropods were strongly correlated with the carbonate chemistry, with the more corrosive conditions in Puget Sound showing the most serious biological impacts. Simone discussed the availability of our NOAA data sets and Jan discussed the availability of WOAC data sets. I concluded the scientific discussions with a talk about the determination of the anthropogenic CO<sub>2</sub> concentrations in the region and its impacts on aragonite saturation state and pteropod dissolution.

After the formal presentations we had a discussion of the availability of both chemical and biological data sets. The EPA staff expressed the strong need for getting this kind of information to their staff in an organized timely manner so they could complete their next 303D review of Washington State waters. We pointed out that while there was a natural national repository for the chemical data (NCEI and CDIAC) no such clear repository exists for synthesized biological response data such as what Nina and other biologists can provide for the community. We agreed that resolving this gap is important and needs to be resolved as part of the PCC collaborative process over the next year.

We ended the meeting agreeing to work closely together to provide the scientific information they need for the next 303D review and to work together to move forward with the recommendations of the Ocean Acidification

and Hypoxia Panel and the PCC-IWG-OA collaborative over the next year or two.

I thought it was an excellent meeting and I was pleased that so many staff members from other regions were on the line.

Let me know if you have any questions about this meeting and how we can move forward with the EPA.

Regards,

Dick, Jan, Simone, Andrea and Nina

----- Forwarded Message -----

**Subject:**Re: OA Meeting: Thanks

**Date:**Mon, 11 Apr 2016 15:17:46 -0700

**From:**Richard Feely <[richard.a.feely@noaa.gov](mailto:richard.a.feely@noaa.gov)>

**To:**Cox, Michael <[Cox.Michael@epa.gov](mailto:Cox.Michael@epa.gov)>, Labiosa, Rochelle <[labiosa.rochelle@epa.gov](mailto:labiosa.rochelle@epa.gov)>, Simone Alin - NOAA Federal <[simone.r.alin@noaa.gov](mailto:simone.r.alin@noaa.gov)>, JAN NEWTON <[janewton@uw.edu](mailto:janewton@uw.edu)>, [nbedna@uw.edu](mailto:nbedna@uw.edu) <[nbedna@uw.edu](mailto:nbedna@uw.edu)>, [andrea.fassbender@naoo.gov](mailto:andrea.fassbender@naoo.gov) <[andrea.fassbender@naoo.gov](mailto:andrea.fassbender@naoo.gov)>

**CC:**Cope, Ben <[Cope.Ben@epa.gov](mailto:Cope.Ben@epa.gov)>, Fullagar, Jill <[Fullagar.Jill@epa.gov](mailto:Fullagar.Jill@epa.gov)>, Littleton, Christine <[Littleton.Christine@epa.gov](mailto:Littleton.Christine@epa.gov)>, Allnutt, David <[Allnutt.David@epa.gov](mailto:Allnutt.David@epa.gov)>, Brown, Cheryl A. <[Brown.Cheryl@epa.gov](mailto:Brown.Cheryl@epa.gov)>, Richard A. Feely <[Richard.A.Feely@noaa.gov](mailto:Richard.A.Feely@noaa.gov)>

Hi Michael:

Thanks again for leading the meeting today. I thought it was an excellent exchange and we are very happy to continue to work closely with you in any way that is helpful.

Let us know if you have any problems accessing our data.

Best regards,

Richard Feely

On 4/11/16 2:54 PM, Cox, Michael wrote:

I wanted to thank everyone for taking the time to meet today. I know you are all very busy and taking a whole morning is a large time commitment.

We learned a lot and it provided us with food for thought.

We will be meeting to discuss our next steps and then touching base with you on how we can continue to work together.

Thanks.

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-----Original Appointment-----

**From:** Labiosa, Rochelle

**Sent:** Friday, March 25, 2016 2:47 PM

**To:** Labiosa, Rochelle; Simone Alin - NOAA Federal; JAN NEWTON; [richard.a.feely@noaa.gov](mailto:richard.a.feely@noaa.gov); Cox, Michael; [nbedna@uw.edu](mailto:nbedna@uw.edu)

**Subject:** agenda and logistics info included on invite - confirmed - informal discussion re OA with EPA staff

**When:** Monday, April 11, 2016 11:00 AM-12:30 PM (UTC-08:00) Pacific Time (US & Canada).

**Where:** 21st floor, Umatilla Room

Simone, Dick, Jan, and Nina, we are looking forward to speaking with you on Monday. Please check in on the 1<sup>st</sup> floor, at the guard's station, and call Mike (he sent an email with agenda).

Simone, I think you will call in via conference line and adobe connect, which Mike sent out in his email with the agenda but which I will repeat here.

*We look forward to our meeting on Monday. We have included a draft agenda below. Please take a look and get back to us with any comments, questions, or concerns. Thanks.*

**Monday April 11<sup>th</sup>**

**11:00 – 12:30 (PST)**

**1200 Sixth Avenue, Seattle**

**21<sup>st</sup> Floor (Umatilla Room)**

**Call-in:** Personal Privacy / Ex. 6

**Code:** Personal Privacy / Ex. 6

**Adobe Connect:** <https://epawebconferencing.acms.com>; Personal Privacy / Ex. 6

*Simone, Dick, Jan, and Nina, please check in on the 1<sup>st</sup> floor, at the guard's station, and we can escort you to the 21<sup>st</sup> Floor.*

**Cell:** Personal Privacy / Ex. 6

**Purpose:**

1. *Discuss West Coast OA and Hypoxia Panel Report.*
2. *Provide a general understanding of EPA's process and data needs to develop water quality criteria for aquatic life and 303(d) listings.*
3. *Overview of Delta C\* methodology used in the Bednarsek paper to estimate pre-industrial and future aragonite saturation conditions.*

**Draft Agenda**

*11:00 – 11:05: Welcome/Purpose (Rochelle/Mike)*

*11:05 – 11:35 Discussion of West Coast OA and Hypoxia Panel Report (Jan/others)*

- *Overview of findings and recommendations*
- *Discussion of paper on 303(d) listing process.*

- *Status of UW fellow research on water quality criteria*

*11:35 – 12:00: Discussion of EPA CWA program (Rochelle/Jill)*

- *Overview of EPA water quality aquatic life criteria development*
- *Overview of 303(d) program and data needs.*
- *Discussion of where current data collection is taking place in state waters (i.e., within three miles of coast line).*

*12:00 – 12:25: Overview of Delta C\* methodology used in the Bednarsek paper to estimate pre-industrial and future aragonite saturation conditions.*

*12:25 – 12:30: Summary and next steps*

*Michael Cox*

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